ABSTRACT

This graduate project focuses on developing an appropriate forecasting method for a Thai ceramic tile manufacturer, with the purpose of reducing inventory level. Analysis showed that the root cause of high inventory in this case was the absence of a systematic forecasting method. Systematic forecasting would allow the planner to repeat the forecasting procedures and measure the forecast results. Hence, an appropriate forecasting method has been developed in this case study.

As a pilot, one item was selected for this case study as it has the highest impact on the company, based on the product contribution analysis. Its demand pattern was explored by plotting graphs and found to be a horizontal data pattern with seasonality during Year End to New Year. Typical Moving Average and Decomposition methods were applied first but could not provide a satisfactory result as they could not accurately forecast the rapid changes in demand. Then, a Mixed Decomposition Model was proposed, which has given a satisfactory result. In this method, it has decomposed the demand characteristics so that the demand pattern in certain periods could be analyzed. This method has taken into account the effect of seasonal and marketing promotions on actual demand, in which distribution fitting software was used to best fit the demand data to theoretical distributions. These methods' errors were compared, based on Mean Absolute Percentage Error (MAPE).

The contribution from this graduate project is to produce a better inventory level from the application of the forecasting method developed. In implementing the forecast, management requirements have been gathered to include the points of concern in forecast implementation. Maintaining the current 100% service level is the priority requirement. The results from applying the new forecasting, together with keeping a safety inventory as insulation against product shortages, have shown that inventory could be reduced without affecting product availability. This consequently reduces by 85% the total inventory cost of the current methodology.